SEQUENCE LISTING

<110> Vanderbilt University
Case Western Reserve University
The Brigham and Women's Hospital, Inc.
Mount, David B
Romero, Michael
<120> CLONING AND CHARACTERIZATION OF SLC26A6, SLC26A1, and SLC26A
ANION EXCHANGERS
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<150> US 60/360,275
<151> 2002-02-28
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35 40 45

Ser Ala Pro Arg Thr His Gln Trp Arg Thr Trp Leu Gln Cys Ser Arg
50 55 60

Ala Arg Ala Tyr Ala Leu Leu Leu Gln His Leu Pro Val Leu Val Trp
65 70 75 80

Leu Pro Arg Tyr Pro Val Arg Asp Trp Leu Leu Gly Asp Leu Leu Ser
85 90 95

Gly Leu Ser Val Ala Ile Met Gln Leu Pro Gln Gly Leu Ala Tyr Ala
100 105 110

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Leu Leu Ala Gly Leu Pro Pro Val Phe Gly Leu Tyr Ser Ser Phe Tyr
        115                 120                 125

Pro Val Phe Ile Tyr Phe Leu Phe Gly Thr Ser Arg His Ile Ser Val
    130                 135                 140

Gly Thr Phe Ala Val Met Ser Val Met Val Gly Ser Val Thr Glu Ser
145                 150                 155                 160

Leu Ala Pro Gln Ala Leu Asn Asp Ser Met Ile Asn Glu Thr Ala Arg
                165                 170                 175

Asp Ala Ala Arg Val Gln Val Ala Ser Thr Leu Ser Val Leu Val Gly
            180                 185                 190

Leu Phe Gln Val Gly Leu Gly Leu Ile His Phe Gly Phe Val Val Thr
        195                 200                 205

Tyr Leu Ser Glu Pro Leu Val Arg Gly Tyr Thr Thr Ala Ala Ala Val
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Gln Val Phe Val Ser Gln Leu Lys Tyr Val Phe Gly Leu His Leu Ser
225                 230                 235                 240

Ser His Ser Gly Pro Leu Ser Leu Ile Tyr Thr Val Leu Glu Val Cys
                245                 250                 255

Trp Lys Leu Pro Gln Ser Lys Val Gly Thr Val Val Thr Ala Ala Val
            260                 265                 270

Ala Gly Val Val Leu Val Val Val Lys Leu Leu Asn Asp Lys Leu Gln
        275                 280                 285

Gln Gln Leu Pro Met Pro Ile Pro Gly Glu Leu Leu Thr Leu Ile Gly
    290                 295                 300

Ala Thr Gly Ile Ser Tyr Gly Met Gly Leu Lys His Arg Phe Glu Val
305                 310                 315                 320

Asp Val Val Gly Asn Ile Pro Ala Gly Leu Val Pro Pro Val Ala Pro
                325                 330                 335

Asn Thr Gln Leu Phe Ser Lys Leu Val Gly Ser Ala Phe Thr Ile Ala
            340                 345                 350

Val Val Gly Phe Ala Ile Ala Ile Ser Leu Gly Lys Ile Phe Ala Leu
        355                 360                 365

Arg His Gly Tyr Arg Val Asp Ser Asn Gln Glu Leu Val Ala Leu Gly
    370                 375                 380

Leu Ser Asn Leu Ile Gly Gly Ile Phe Gln Cys Phe Pro Val Ser Cys
385                 390                 395                 400

Ser Met Ser Arg Ser Leu Val Gln Glu Ser Thr Gly Gly Asn Ser Gln
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Val Ala Gly Ala Ile Ser Ser Leu Phe Ile Leu Leu Ile Ile Val Lys
            420                 425                 430

Leu Gly Glu Leu Phe His Asp Leu Pro Lys Ala Val Leu Ala Ala Ile
        435                 440                 445

Ile Ile Val Asn Leu Lys Gly Met Leu Arg Gln Leu Ser Asp Met Arg
    450                 455                 460

Ser Leu Trp Lys Ala Asn Arg Ala Asp Leu Leu Ile Trp Leu Val Thr
465                 470                 475                 480
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Phe Thr Ala Thr Ile Leu Leu Asn Leu Asp Leu Gly Leu Val Val Ala
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Val Ile Phe Ser Leu Leu Leu Val Val Val Arg Thr Gln Met Pro His
            500                 505                 510

Tyr Ser Val Leu Gly Gln Val Pro Asp Thr Asp Ile Tyr Arg Asp Val
        515                 520                 525

Ala Glu Tyr Ser Glu Ala Lys Glu Val Arg Gly Val Lys Val Phe Arg
    530                 535                 540

Ser Ser Ala Thr Val Tyr Phe Ala Asn Ala Glu Phe Tyr Ser Asp Ala
545                 550                 555                 560

Leu Lys Gln Arg Cys Gly Val Asp Val Asp Phe Leu Ile Ser Gln Lys
                565                 570                 575

Lys Lys Leu Leu Lys Lys Gln Glu Gln Leu Lys Leu Lys Gln Leu Gln
            580                 585                 590

Lys Glu Glu Lys Leu Arg Lys Gln Ala Ala Ser Pro Lys Gly Ala Ser
        595                 600                 605

Val Ser Ile Asn Val Asn Thr Ser Leu Glu Asp Met Arg Ser Asn Asn
    610                 615                 620

Val Glu Asp Cys Lys Met Met Val Ser Ser Gly Asp Lys Met Glu Asp
625                 630                 635                 640

Ala Thr Ala Asn Gly Gln Glu Asp Ser Lys Ala Pro Asp Gly Ser Thr
                645                 650                 655

Leu Lys Ala Leu Gly Leu Pro Gln Pro Asp Phe His Ser Leu Ile Leu
            660                 665                 670

Asp Leu Gly Ala Leu Ser Phe Val Asp Thr Val Cys Leu Lys Ser Leu
        675                 680                 685

Lys Asn Ile Phe His Asp Phe Arg Glu Ile Glu Val Glu Val Tyr Met
    690                 695                 700

Ala Ala Cys His Ser Pro Val Val Ser Gln Leu Glu Ala Gly His Phe
705                 710                 715                 720

Phe Asp Ala Ser Ile Thr Lys Lys His Leu Phe Ala Ser Val His Asp
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Ala Val Thr Phe Ala Leu Gln His Pro Arg Pro Val Pro Asp Ser Pro
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Val Ser Val Thr Arg Leu
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tcactgtgtc tctctggtct tgccacccca gaccgaggga cacacaggca ctgctgtctg

caacacaagc a atg gac ctg cgg agg cga gac tac cac atg gaa cgg ccg
            Met Asp Leu Arg Arg Arg Asp Tyr His Met Glu Arg Pro
            1               5                   10

ctg ctg aac cag gag cat ttg gag gag ctg ggg cgc tgg ggc tca gca
Leu Leu Asn Gln Glu His Leu Glu Glu Leu Gly Arg Trp Gly Ser Ala
    15                  20                  25

cct agg acc cac cag tgg cgg acc tgg ttg cag tgc tcc cgt gct cgg
Pro Arg Thr His Gln Trp Arg Thr Trp Leu Gln Cys Ser Arg Ala Arg
30                  35                  40                  45

gcc tat gcc ctt ctg ctc caa cac ctc ccg gtt ttg gtc tgg tta ccc
Ala Tyr Ala Leu Leu Leu Gln His Leu Pro Val Leu Val Trp Leu Pro
                50                  55                  60

cgg tat cct gtg cgt gac tgg ctc ctg ggt gac ctg tta tcc ggc ctg
Arg Tyr Pro Val Arg Asp Trp Leu Leu Gly Asp Leu Leu Ser Gly Leu
            65                  70                  75

agt gtg gcc atc atg cag ctt ccg cag ggc ttg gcc tac gcc ctc ctg
Ser Val Ala Ile Met Gln Leu Pro Gln Gly Leu Ala Tyr Ala Leu Leu
        80                  85                  90

gct gga ttg ccc ccc gtg ttt ggc ctc tat agc tcc ttc tac cct gtc
Ala Gly Leu Pro Pro Val Phe Gly Leu Tyr Ser Ser Phe Tyr Pro Val
    95                  100                 105

ttc atc tac ttc ctg ttt ggc act tcc cgg cac atc tcc gtg ggg acc
Phe Ile Tyr Phe Leu Phe Gly Thr Ser Arg His Ile Ser Val Gly Thr
110                 115                 120                 125

ttt gct gtc atg tct gtg atg gtg ggc agt gtg aca gaa tcc ctg gcc
Phe Ala Val Met Ser Val Met Val Gly Ser Val Thr Glu Ser Leu Ala
                130                 135                 140

ccg cag gcc ttg aac gac tcc atg atc aat gag aca gcc aga gat gct
Pro Gln Ala Leu Asn Asp Ser Met Ile Asn Glu Thr Ala Arg Asp Ala
            145                 150                 155

gcc cgg gta cag gtg gcc tcc aca ctc agt gtc ctg gtt ggc ctc ttc
Ala Arg Val Gln Val Ala Ser Thr Leu Ser Val Leu Val Gly Leu Phe
        160                 165                 170

cag gtg ggg ctg ggc ctg atc cac ttc ggc ttc gtg gtc acc tac ctg
Gln Val Gly Leu Gly Leu Ile His Phe Gly Phe Val Val Thr Tyr Leu
    175                 180                 185

tca gaa cct ctt gtc cga ggc tat acc aca gct gca gct gtg cag gtc
Ser Glu Pro Leu Val Arg Gly Tyr Thr Thr Ala Ala Ala Val Gln Val
190                 195                 200                 205

ttc gtc tca cag ctc aag tat gtg ttt ggc ctc cat ctg agc agc cac
Phe Val Ser Gln Leu Lys Tyr Val Phe Gly Leu His Leu Ser Ser His
                210                 215                 220

tct ggg cca ctg tcc ctc atc tat aca gtg ctg gag gtc tgc tgg aag
Ser Gly Pro Leu Ser Leu Ile Tyr Thr Val Leu Glu Val Cys Trp Lys
            225                 230                 235

ctg ccc cag agc aag gtt ggc acc gtg gtc act gca gct gtg gct ggg
Leu Pro Gln Ser Lys Val Gly Thr Val Val Thr Ala Ala Val Ala Gly
        240                 245                 250
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gtg gtg ctc gtg gtg gtg aag ctg ttg aat gac aag ctg cag cag cag
Val Val Leu Val Val Val Lys Leu Leu Asn Asp Lys Leu Gln Gln Gln
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ctg ccc atg ccg ata ccc ggg gag ctg ctc acg ctc atc ggg gcc aca
Leu Pro Met Pro Ile Pro Gly Glu Leu Leu Thr Leu Ile Gly Ala Thr
270                 275                 280                 285

ggc atc tcc tat ggc atg ggt cta aag cac aga ttt gag gta gat gtc
Gly Ile Ser Tyr Gly Met Gly Leu Lys His Arg Phe Glu Val Asp Val
                290                 295                 300

gtg ggc aac atc cct gca ggg ctg gtg ccc cca gtg gcc ccc aac acc
Val Gly Asn Ile Pro Ala Gly Leu Val Pro Pro Val Ala Pro Asn Thr
            305                 310                 315

cag ctg ttc tca aag ctc gtg ggc agc gcc ttc acc atc gct gtg gtt
Gln Leu Phe Ser Lys Leu Val Gly Ser Ala Phe Thr Ile Ala Val Val
        320                 325                 330

ggg ttt gcc att gcc atc tca ctg ggg aag atc ttc gcc ctg agg cac
Gly Phe Ala Ile Ala Ile Ser Leu Gly Lys Ile Phe Ala Leu Arg His
    335                 340                 345

ggc tac cgg gtg gac agc aac cag gag ctg gtg gcc ctg ggc ctc agt
Gly Tyr Arg Val Asp Ser Asn Gln Glu Leu Val Ala Leu Gly Leu Ser
350                 355                 360                 365

aac ctt atc gga ggc atc ttc cag tgc ttc ccc gtg agt tgc tct atg
Asn Leu Ile Gly Gly Ile Phe Gln Cys Phe Pro Val Ser Cys Ser Met
                370                 375                 380

tct cgg agc ctg gta cag gag agc acc ggg ggc aac tcg cag gtt gct
Ser Arg Ser Leu Val Gln Glu Ser Thr Gly Gly Asn Ser Gln Val Ala
            385                 390                 395

gga gcc atc tct tcc ctt ttc atc ctc ctc atc att gtc aaa ctt ggg
Gly Ala Ile Ser Ser Leu Phe Ile Leu Leu Ile Ile Val Lys Leu Gly
        400                 405                 410

gaa ctc ttc cat gac ctg ccc aag gcg gtc ctg gca gcc atc atc att
Glu Leu Phe His Asp Leu Pro Lys Ala Val Leu Ala Ala Ile Ile Ile
    415                 420                 425

gtg aac ctg aag ggc atg ctg agg cag ctc agc gac atg cgc tcc ctc
Val Asn Leu Lys Gly Met Leu Arg Gln Leu Ser Asp Met Arg Ser Leu
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tgg aag gcc aat cgg gcg gat ctg ctt atc tgg ctg gtg acc ttc acg
Trp Lys Ala Asn Arg Ala Asp Leu Leu Ile Trp Leu Val Thr Phe Thr
                450                 455                 460

gcc acc atc ttg ctg aac ctg gac ctt ggc ttg gtg gtt gcg gtc atc
Ala Thr Ile Leu Leu Asn Leu Asp Leu Gly Leu Val Val Ala Val Ile
            465                 470                 475

ttc tcc ctg ctg ctc gtg gtg gtc cgg aca cag atg ccc cac tac tct
Phe Ser Leu Leu Leu Val Val Val Arg Thr Gln Met Pro His Tyr Ser
        480                 485                 490

gtc ctg ggg cag gtg cca gac acg gat att tac aga gat gtg gca gag
Val Leu Gly Gln Val Pro Asp Thr Asp Ile Tyr Arg Asp Val Ala Glu
    495                 500                 505

tac tca gag gcc aag gaa gtc cgg ggg gtg aag gtc ttc cgc tcc tcg
Tyr Ser Glu Ala Lys Glu Val Arg Gly Val Lys Val Phe Arg Ser Ser
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gcc acc gtg tac ttt gcc aat gct gag ttc tac agt gat gcg ctg aag
Ala Thr Val Tyr Phe Ala Asn Ala Glu Phe Tyr Ser Asp Ala Leu Lys
                530                 535                 540

cag agg tgt ggt gtg gat gtc gac ttc ctc atc tcc cag aag aag aaa
Gln Arg Cys Gly Val Asp Val Asp Phe Leu Ile Ser Gln Lys Lys Lys
            545                 550                 555

ctg ctc aag aag cag gag cag ctg aag ctg aag caa ctg cag aaa gag
Leu Leu Lys Lys Gln Glu Gln Leu Lys Leu Lys Gln Leu Gln Lys Glu
        560                 565                 570

gag aag ctt cgg aaa cag gct gcc tcc ccc aag ggc gcc tca gtt tcc
Glu Lys Leu Arg Lys Gln Ala Ala Ser Pro Lys Gly Ala Ser Val Ser
    575                 580                 585

att aat gtc aac acc agc ctt gaa gac atg agg agc aac aac gtt gag
Ile Asn Val Asn Thr Ser Leu Glu Asp Met Arg Ser Asn Asn Val Glu
590                 595                 600                 605

gac tgc aag atg atg cag gtg agc tca gga gat aag atg gaa gat gca
Asp Cys Lys Met Met Gln Val Ser Ser Gly Asp Lys Met Glu Asp Ala
                610                 615                 620

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Thr Ala Asn Gly Gln Glu Asp Ser Lys Ala Pro Asp Gly Ser Thr Leu
            625                 630                 635

aag gcc ctg ggc ctg cct cag cca gac ttc cac agc ctc atc ctg gac
Lys Ala Leu Gly Leu Pro Gln Pro Asp Phe His Ser Leu Ile Leu Asp
        640                 645                 650

ctg ggt gcc ctc tcc ttt gtg gac act gtg tgc ctc aag agc ctg aag
Leu Gly Ala Leu Ser Phe Val Asp Thr Val Cys Leu Lys Ser Leu Lys
    655                 660                 665

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Asn Ile Phe His Asp Phe Arg Glu Ile Glu Val Glu Val Tyr Met Ala
670                 675                 680                 685

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Ala Cys His Ser Pro Val Val Ser Gln Leu Glu Ala Gly His Phe Phe
                690                 695                 700

gat gca tcc atc acc aag aag cat ctc ttt gcc tct gtc cat gat gct
Asp Ala Ser Ile Thr Lys Lys His Leu Phe Ala Ser Val His Asp Ala
            705                 710                 715

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Val Thr Phe Ala Leu Gln His Pro Arg Pro Val Pro Asp Ser Pro Val
        720                 725                 730

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Ser Val Thr Arg Leu
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His Gln Trp Arg Thr Trp Leu Gln Cys Ser Arg Ala Arg Ala Tyr Ala
        35                  40                  45

Leu Leu Leu Gln His Leu Pro Val Leu Val Trp Leu Pro Arg Tyr Pro
    50                  55                  60

Val Arg Asp Trp Leu Leu Gly Asp Leu Leu Ser Gly Leu Ser Val Ala
65                  70                  75                  80

Ile Met Gln Leu Pro Gln Gly Leu Ala Tyr Ala Leu Leu Ala Gly Leu
                85                  90                  95

Pro Pro Val Phe Gly Leu Tyr Ser Ser Phe Tyr Pro Val Phe Ile Tyr
            100                 105                 110

Phe Leu Phe Gly Thr Ser Arg His Ile Ser Val Gly Thr Phe Ala Val
        115                 120                 125

Met Ser Val Met Val Gly Ser Val Thr Glu Ser Leu Ala Pro Gln Ala
    130                 135                 140

Leu Asn Asp Ser Met Ile Asn Glu Thr Ala Arg Asp Ala Ala Arg Val
145                 150                 155                 160

Gln Val Ala Ser Thr Leu Ser Val Leu Val Gly Leu Phe Gln Val Gly
                165                 170                 175

Leu Gly Leu Ile His Phe Gly Phe Val Val Thr Tyr Leu Ser Glu Pro
            180                 185                 190

Leu Val Arg Gly Tyr Thr Thr Ala Ala Ala Val Gln Val Phe Val Ser
        195                 200                 205

Gln Leu Lys Tyr Val Phe Gly Leu His Leu Ser Ser His Ser Gly Pro
    210                 215                 220

Leu Ser Leu Ile Tyr Thr Val Leu Glu Val Cys Trp Lys Leu Pro Gln
225                 230                 235                 240

Ser Lys Val Gly Thr Val Val Thr Ala Ala Val Ala Gly Val Val Leu
                245                 250                 255

Val Val Val Lys Leu Leu Asn Asp Lys Leu Gln Gln Gln Leu Pro Met
            260                 265                 270

Pro Ile Pro Gly Glu Leu Leu Thr Leu Ile Gly Ala Thr Gly Ile Ser
        275                 280                 285

Tyr Gly Met Gly Leu Lys His Arg Phe Glu Val Asp Val Val Gly Asn
    290                 295                 300

Ile Pro Ala Gly Leu Val Pro Pro Val Ala Pro Asn Thr Gln Leu Phe
305                 310                 315                 320

Ser Lys Leu Val Gly Ser Ala Phe Thr Ile Ala Val Val Gly Phe Ala
                325                 330                 335
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Ile Ala Ile Ser Leu Gly Lys Ile Phe Ala Leu Arg His Gly Tyr Arg
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Val Asp Ser Asn Gln Glu Leu Val Ala Leu Gly Leu Ser Asn Leu Ile
        355                 360                 365

Gly Gly Ile Phe Gln Cys Phe Pro Val Ser Cys Ser Met Ser Arg Ser
    370                 375                 380

Leu Val Gln Glu Ser Thr Gly Gly Asn Ser Gln Val Ala Gly Ala Ile
385                 390                 395                 400

Ser Ser Leu Phe Ile Leu Leu Ile Ile Val Lys Leu Gly Glu Leu Phe
                405                 410                 415

His Asp Leu Pro Lys Ala Val Leu Ala Ala Ile Ile Ile Val Asn Leu
            420                 425                 430

Lys Gly Met Leu Arg Gln Leu Ser Asp Met Arg Ser Leu Trp Lys Ala
        435                 440                 445

Asn Arg Ala Asp Leu Leu Ile Trp Leu Val Thr Phe Thr Ala Thr Ile
    450                 455                 460

Leu Leu Asn Leu Asp Leu Gly Leu Val Val Ala Val Ile Phe Ser Leu
465                 470                 475                 480

Leu Leu Val Val Val Arg Thr Gln Met Pro His Tyr Ser Val Leu Gly
                485                 490                 495

Gln Val Pro Asp Thr Asp Ile Tyr Arg Asp Val Ala Glu Tyr Ser Glu
            500                 505                 510

Ala Lys Glu Val Arg Gly Val Lys Val Phe Arg Ser Ser Ala Thr Val
        515                 520                 525

Tyr Phe Ala Asn Ala Glu Phe Tyr Ser Asp Ala Leu Lys Gln Arg Cys
    530                 535                 540

Gly Val Asp Val Asp Phe Leu Ile Ser Gln Lys Lys Lys Leu Leu Lys
545                 550                 555                 560

Lys Gln Glu Gln Leu Lys Leu Lys Gln Leu Gln Lys Glu Glu Lys Leu
                565                 570                 575

Arg Lys Gln Ala Ala Ser Pro Lys Gly Ala Ser Val Ser Ile Asn Val
            580                 585                 590

Asn Thr Ser Leu Glu Asp Met Arg Ser Asn Asn Val Glu Asp Cys Lys
        595                 600                 605

Met Met Gln Val Ser Ser Gly Asp Lys Met Glu Asp Ala Thr Ala Asn
    610                 615                 620

Gly Gln Glu Asp Ser Lys Ala Pro Asp Gly Ser Thr Leu Lys Ala Leu
625                 630                 635                 640

Gly Leu Pro Gln Pro Asp Phe His Ser Leu Ile Leu Asp Leu Gly Ala
                645                 650                 655

Leu Ser Phe Val Asp Thr Val Cys Leu Lys Ser Leu Lys Asn Ile Phe
            660                 665                 670

His Asp Phe Arg Glu Ile Glu Val Glu Val Tyr Met Ala Ala Cys His
        675                 680                 685

Ser Pro Val Val Ser Gln Leu Glu Ala Gly His Phe Phe Asp Ala Ser
    690                 695                 700
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Ala Leu Gln His Pro Arg Pro Val Pro Asp Ser Pro Val Ser Val Thr
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Arg Leu

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35 40 45

Trp Gly Pro Ala Ala Lys Thr His Gln Trp Arg Thr Trp Phe Arg Cys
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Ser Arg Ala Arg Ala His Ser Leu Leu Leu Gln His Val Pro Val Leu
65 70 75 80

Gly Trp Leu Pro Arg Tyr Pro Val Arg Glu Trp Leu Leu Gly Asp Leu
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Leu Ser Gly Leu Ser Val Ala Ile Met Gln Leu Pro Gln Gly Leu Ala
100 105 110

Tyr Ala Leu Leu Ala Gly Leu Pro Pro Met Phe Gly Leu Tyr Ser Ser
115 120 125

Phe Tyr Pro Val Phe Ile Tyr Phe Leu Phe Gly Thr Ser Arg His Ile
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Ser Val Gly Thr Phe Ala Val Met Ser Val Met Val Gly Ser Val Thr
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Glu Ser Leu Thr Ala Asp Lys Ala Phe Val Gln Gly Leu Asn Ala Thr
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Ala Asp Asp Ala Arg Val Gln Val Ala Tyr Thr Leu Ser Phe Leu Val
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Gly Leu Phe Gln Val Gly Leu Gly Leu Val His Phe Gly Phe Val Val
        195                 200                 205

Thr Tyr Leu Ser Glu Pro Leu Val Arg Ser Tyr Thr Thr Ala Ala Ser
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Val Gln Val Leu Val Ser Gln Leu Lys Tyr Val Phe Gly Ile Lys Leu
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Ser Ser His Ser Gly Pro Leu Ser Val Ile Tyr Thr Val Leu Glu Val
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Cys Ala Gln Leu Pro Glu Thr Val Pro Gly Thr Val Val Thr Ala Ile
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Val Ala Gly Val Ala Leu Val Leu Val Lys Leu Leu Asn Glu Lys Leu
        275                 280                 285

His Arg Arg Leu Pro Leu Pro Ile Pro Gly Glu Leu Leu Thr Leu Ile
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Gly Ala Thr Gly Ile Ser Tyr Gly Val Lys Leu Asn Asp Arg Phe Lys
305                 310                 315                 320

Val Asp Val Val Gly Asn Ile Thr Thr Gly Leu Ile Pro Pro Val Ala
                325                 330                 335

Pro Lys Thr Glu Leu Phe Ala Thr Leu Val Gly Asn Ala Phe Ala Ile
            340                 345                 350

Ala Val Val Gly Phe Ala Ile Ala Ile Ser Leu Gly Lys Ile Phe Ala
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Leu Arg His Gly Tyr Arg Val Asp Ser Asn Gln Glu Leu Val Ala Leu
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Gly Leu Ser Asn Leu Ile Gly Gly Phe Phe Gln Cys Phe Pro Val Ser
385                 390                 395                 400

Cys Ser Met Ser Arg Ser Leu Val Gln Glu Ser Thr Gly Gly Asn Thr
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Gln Val Ala Gly Ala Val Ser Ser Leu Phe Ile Leu Leu Ile Ile Val
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Lys Leu Gly Glu Leu Phe Arg Asp Leu Pro Lys Ala Val Leu Ala Ala
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Val Ile Ile Val Asn Leu Lys Gly Met Met Lys Gln Phe Ser Asp Ile
    450                 455                 460

Cys Ser Leu Trp Lys Ala Asn Arg Val Asp Leu Leu Ile Trp Leu Val
465                 470                 475                 480

Thr Phe Val Ala Thr Ile Leu Leu Asn Leu Asp Ile Gly Leu Ala Val
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Ser Ile Val Phe Ser Leu Leu Leu Val Val Val Arg Met Gln Leu Pro
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His Tyr Ser Val Leu Gly Gln Val Pro Asp Thr Asp Ile Tyr Arg Asp
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Val Ala Glu Tyr Ser Gly Ala Lys Glu Val Pro Gly Val Lys Val Phe
    530                 535                 540

Arg Ser Ser Ala Thr Leu Tyr Phe Ala Asn Ala Glu Leu Tyr Ser Asp
545                 550                 555                 560

Ser Leu Lys Glu Lys Cys Gly Val Asp Val Asp Pro Leu Ile Thr Gln
                565                 570                 575

Lys Lys Lys Arg Ile Lys Lys Gln Glu Met Lys Leu Lys Arg Met Lys
            580                 585                 590

Lys Ala Lys Lys Ser Gln Lys Gln Asp Ala Ser Ser Lys Ile Ser Ser
        595                 600                 605

Val Ser Val Asn Val Asn Thr Asn Leu Glu Asp Val Lys Ser Asn Asp
    610                 615                 620

Val Glu Gly Ser Glu Ala Lys Val His Gln Gly Glu Glu Leu Gln Asp
625                 630                 635                 640

Val Val Ser Ser Asn Gln Glu Asp Ala Lys Ala Pro Thr Met Thr Ser
                645                 650                 655

Leu Lys Ser Leu Gly Leu Pro Gln Pro Gly Phe His Ser Leu Ile Leu
            660                 665                 670

Asp Leu Ser Thr Leu Ser Phe Val Asp Thr Val Cys Ile Lys Ser Leu
        675                 680                 685

Lys Asn Ile Phe Arg Asp Phe Arg Glu Ile Glu Val Glu Val Tyr Ile
    690                 695                 700

Ala Ala Cys Tyr Ser Pro Val Val Ala Gln Leu Glu Ala Gly His Phe
705                 710                 715                 720

Phe Asp Glu Ser Ile Thr Lys Gln His Val Phe Ala Ser Val His Asp
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Val Leu Ala Thr Lys Leu
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His Gln Trp Arg Thr Trp Phe Arg Cys Ser Arg Ala Arg Ala His Ser
        35                  40                  45

Leu Leu Leu Gln His Val Pro Val Leu Gly Trp Leu Pro Arg Tyr Pro
    50                  55                  60

Val Arg Glu Trp Leu Leu Gly Asp Leu Leu Ser Gly Leu Ser Val Ala
65                  70                  75                  80

Ile Met Gln Leu Pro Gln Gly Leu Ala Tyr Ala Leu Leu Ala Gly Leu
                85                  90                  95

Pro Pro Met Phe Gly Leu Tyr Ser Ser Phe Tyr Pro Val Phe Ile Tyr
            100                 105                 110

Phe Leu Phe Gly Thr Ser Arg His Ile Ser Val Gly Thr Phe Ala Val
        115                 120                 125

Met Ser Val Met Val Gly Ser Val Thr Glu Ser Leu Thr Ala Asp Lys
    130                 135                 140

Ala Phe Val Gln Gly Leu Asn Ala Thr Ala Asp Asp Ala Arg Val Gln
145                 150                 155                 160

Val Ala Tyr Thr Leu Ser Phe Leu Val Gly Leu Phe Gln Val Gly Leu
                165                 170                 175

Gly Leu Val His Phe Gly Phe Val Val Thr Tyr Leu Ser Glu Pro Leu
            180                 185                 190

Val Arg Ser Tyr Thr Thr Ala Ala Ser Val Gln Val Leu Val Ser Gln
        195                 200                 205

Leu Lys Tyr Val Phe Gly Ile Lys Leu Ser Ser His Ser Gly Pro Leu
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Ser Val Ile Tyr Thr Val Leu Glu Val Cys Ala Gln Leu Pro Glu Thr
225                 230                 235                 240

Val Pro Gly Thr Val Val Thr Ala Ile Val Ala Gly Val Ala Leu Val
                245                 250                 255

Leu Val Lys Leu Leu Asn Glu Lys Leu His Arg Arg Leu Pro Leu Pro
            260                 265                 270

Ile Pro Gly Glu Leu Leu Thr Leu Ile Gly Ala Thr Gly Ile Ser Tyr
        275                 280                 285
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Gly Val Lys Leu Asn Asp Arg Phe Lys Val Asp Val Val Gly Asn Ile
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Thr Thr Gly Leu Ile Pro Pro Val Ala Pro Lys Thr Glu Leu Phe Ala
305                 310                 315                 320

Thr Leu Val Gly Asn Ala Phe Ala Ile Ala Val Val Gly Phe Ala Ile
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Ala Ile Ser Leu Gly Lys Ile Phe Ala Leu Arg His Gly Tyr Arg Val
            340                 345                 350

Asp Ser Asn Gln Glu Leu Val Ala Leu Gly Leu Ser Asn Leu Ile Gly
        355                 360                 365

Gly Phe Phe Gln Cys Phe Pro Val Ser Cys Ser Met Ser Arg Ser Leu
    370                 375                 380

Val Gln Glu Ser Thr Gly Gly Asn Thr Gln Val Ala Gly Ala Val Ser
385                 390                 395                 400

Ser Leu Phe Ile Leu Leu Ile Ile Val Lys Leu Gly Glu Leu Phe Arg
                405                 410                 415

Asp Leu Pro Lys Ala Val Leu Ala Ala Val Ile Ile Val Asn Leu Lys
            420                 425                 430

Gly Met Met Lys Gln Phe Ser Asp Ile Cys Ser Leu Trp Lys Ala Asn
        435                 440                 445

Arg Val Asp Leu Leu Ile Trp Leu Val Thr Phe Val Ala Thr Ile Leu
    450                 455                 460

Leu Asn Leu Asp Ile Gly Leu Ala Val Ser Ile Val Phe Ser Leu Leu
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Leu Val Val Val Arg Met Gln Leu Pro His Tyr Ser Val Leu Gly Gln
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Val Pro Asp Thr Asp Ile Tyr Arg Asp Val Ala Glu Tyr Ser Gly Ala
            500                 505                 510

Lys Glu Val Pro Gly Val Lys Val Phe Arg Ser Ser Ala Thr Leu Tyr
        515                 520                 525

Phe Ala Asn Ala Glu Leu Tyr Ser Asp Ser Leu Lys Glu Lys Cys Gly
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Val Asp Val Asp Pro Leu Ile Thr Gln Lys Lys Lys Arg Ile Lys Lys
545                 550                 555                 560

Gln Glu Met Lys Leu Lys Arg Met Lys Lys Ala Lys Lys Ser Gln Lys
                565                 570                 575

Gln Asp Ala Ser Ser Lys Ile Ser Ser Val Ser Val Asn Val Asn Thr
            580                 585                 590

Asn Leu Glu Asp Val Lys Ser Asn Asp Val Glu Gly Ser Glu Ala Lys
        595                 600                 605

Val His Gln Gly Glu Glu Leu Gln Asp Val Val Ser Ser Asn Gln Glu
    610                 615                 620

Asp Ala Lys Ala Pro Thr Met Thr Ser Leu Lys Ser Leu Gly Leu Pro
625                 630                 635                 640

Gln Pro Gly Phe His Ser Leu Ile Leu Asp Leu Ser Thr Leu Ser Phe
                645                 650                 655
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Val Asp Thr Val Cys Ile Lys Ser Leu Lys Asn Ile Phe Arg Asp Phe
660 665 670

Arg Glu Ile Glu Val Glu Val Tyr Ile Ala Ala Cys Tyr Ser Pro Val
675 680 685

Val Ala Gln Leu Glu Ala Gly His Phe Phe Asp Glu Ser Ile Thr Lys
690 695 700

Gln His Val Phe Ala Ser Val His Asp Ala Val Thr Phe Ala Leu Ser
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His Arg Lys Ser Val Pro Lys Ser Pro Val Leu Ala Thr Lys Leu
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Leu Val Gln Gly Leu Phe Pro Ala Ile His Trp Leu Pro Gln Tyr Arg
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Leu Lys Glu Tyr Leu Ala Gly Asp Val Met Ser Gly Leu Val Ile Gly
65                  70                  75                  80

Ile Ile Leu Val Pro Gln Ala Ile Ala Tyr Ser Leu Leu Ala Gly Leu
                85                  90                  95

Gln Pro Ile Tyr Ser Leu Tyr Thr Ser Phe Phe Ala Asn Leu Ile Tyr
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Phe Leu Met Gly Thr Ser Arg His Val Asn Val Gly Ile Phe Ser Leu
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Leu Cys Leu Met Val Gly Gln Val Val Asp Arg Glu Leu Gln Leu Ala
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Gly Phe Asp Pro Ser Gln Asp Ser Leu Gly Pro Lys Asn Asn Asp Ser
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Thr Leu Asn Asn Ser Ala Thr Thr Leu Ile Ile Gly Leu Gln Asp Cys
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Arg Arg Asp Cys Tyr Ala Ile Arg Val Ala Thr Ala Leu Thr Leu Met
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Ala Gly Leu Tyr Gln Val Leu Met Gly Ile Leu Arg Leu Gly Phe Val
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Ser Thr Tyr Leu Ser Gln Pro Leu Leu Asp Gly Phe Ala Met Gly Ala
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Ser Val Thr Ile Leu Thr Ser Gln Ala Lys His Met Leu Gly Val Gln
225                 230                 235                 240

Ile Pro Arg His Gln Gly Leu Gly Met Val Val His Thr Trp Leu Ser
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Leu Leu Gln Asn Val Gly Gln Ala Asn Ile Cys Asp Val Val Thr Ser
            260                 265                 270

Ala Leu Cys Leu Gly Val Leu Leu Ala Ala Lys Glu Leu Ser Asp Arg
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Tyr Arg His Arg Leu Lys Val Pro Ile Pro Thr Glu Leu Phe Val Ile
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Val Val Ala Thr Ile Val Ser His Phe Gly Gln Leu His Thr Arg Phe
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Asp Ser Arg Val Ala Gly Asn Ile Pro Thr Gly Phe Val Ala Pro Gln
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Val Pro Asp Pro Lys Ile Met Trp Arg Val Ala Leu Asp Ala Met Ser
            340                 345                 350

Leu Ala Leu Val Gly Ser Ala Phe Ser Ile Ser Leu Ala Glu Met Phe
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Ala Arg Ser His Gly Tyr Ser Val Ser Ala Asn Gln Glu Leu Leu Ala
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Val Gly Cys Cys Asn Val Leu Pro Ala Phe Phe His Cys Phe Ala Thr
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Ser Ala Ala Leu Ser Lys Thr Leu Val Lys Ile Ala Thr Gly Cys Gln
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Thr Gln Leu Ser Ser Val Val Ser Ala Ala Val Val Leu Leu Val Leu
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Leu Val Leu Ala Pro Leu Phe His Asp Leu Gln Arg Cys Val Leu Ala
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Cys Ile Ile Val Val Ser Leu Arg Gly Ala Leu Arg Lys Val Lys Asp
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Leu Pro Gln Leu Trp Arg Leu Ser Pro Ala Asp Ala Leu Val Trp Val
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Ala Thr Ala Ala Thr Cys Val Leu Val Ser Thr Glu Ala Gly Leu Leu
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Ala Gly Val Phe Phe Ser Leu Leu Ser Leu Ala Gly Arg Thr Gln Arg
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Pro Arg Ala Ala Leu Leu Ala Arg Ile Gly Asp Ser Thr Phe Tyr Glu
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Asp Ala Ala Glu Phe Glu Gly Leu Leu Pro Pro Pro Glu Val Arg Val
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Phe Arg Phe Thr Gly Pro Leu Tyr Tyr Ala Asn Lys Asp Phe Phe Leu
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Arg Ser Leu Tyr Arg Leu Thr Gly Leu Asp Ala Gly His Ser Ala Thr
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Arg Lys Asp Gln Gly Pro Glu Val Gly Val Ser Asn Arg Ser Leu Val
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Asp Gly Lys Asp Leu Gly Ser Val Ser Ser Gly Ala Gly Leu Val Val
        595                 600                 605

Pro Leu Ala Phe Gly Phe His Thr Val Val Ile Asp Cys Ala Pro Leu
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Leu Phe Leu Asp Val Ala Gly Met Ala Thr Leu Lys Asp Leu Arg Arg
625                 630                 635                 640

Asp Tyr Arg Ala Leu Asp Ile Thr Leu Leu Leu Ala Cys Cys Ser Pro
                645                 650                 655

Ser Val Arg Asp Thr Leu Arg Lys Gly Gly Phe Leu Gly Glu Glu Gln
            660                 665                 670

Gly Ala Glu Asn Glu Leu Leu Phe Pro Ser Val His Ser Ala Val Glu
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Ala Ala Tyr Ala Arg Arg Glu Glu Leu Leu Ala Ala Asp Ser Ala Leu
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35 40 45

Arg Ala Phe Arg Arg Ile His Met Glu Leu Arg Glu Lys Pro Asp Thr
50 55 60

Asp Ile Lys Gln Phe Val Ile Arg Glu Leu Gln Lys Ser Cys Gln Cys
65 70 75 80

Ser Ala Ala Lys Val Arg Asp Gly Ala Phe Asp Phe Phe Pro Val Leu
85 90 95

Arg Trp Leu Pro Lys Tyr Asp Leu Lys Lys Asn Ile Leu Gly Asp Val
100 105 110

Met Ser Gly Leu Ile Val Gly Ile Leu Leu Val Pro Gln Ser Ile Ala
115 120 125

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Tyr Ser Leu Leu Ala Gly Gln Glu Pro Ile Tyr Gly Leu Tyr Thr Ser
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Phe Phe Ala Ser Ile Ile Tyr Phe Leu Phe Gly Thr Ser Arg His Ile
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Ser Val Gly Ile Phe Gly Ile Leu Cys Leu Met Ile Gly Glu Val Val
                165                 170                 175

Asp Arg Glu Leu His Lys Ala Cys Pro Asp Thr Asp Ala Thr Ser Ser
            180                 185                 190

Ser Ile Ala Val Phe Ser Ser Gly Cys Val Val Val Asn His Thr Leu
        195                 200                 205

Asp Gly Leu Cys Asp Lys Ser Cys Tyr Ala Ile Lys Ile Gly Ser Thr
    210                 215                 220

Val Thr Phe Met Ala Gly Val Tyr Gln Val Ala Met Gly Phe Phe Gln
225                 230                 235                 240

Val Gly Phe Val Ser Val Tyr Leu Ser Asp Ala Leu Leu Ser Gly Phe
                245                 250                 255

Val Thr Gly Ala Ser Phe Thr Ile Leu Thr Ser Gln Ala Lys Tyr Leu
            260                 265                 270

Leu Gly Leu Ser Leu Pro Arg Ser His Gly Val Gly Ser Val Ile Thr
        275                 280                 285

Thr Trp Ile His Ile Phe Arg Asn Ile Arg Asn Thr Asn Ile Cys Asp
    290                 295                 300

Leu Ile Thr Ser Leu Leu Cys Leu Leu Val Leu Val Pro Ser Lys Glu
305                 310                 315                 320

Leu Asn Glu His Phe Lys Asp Lys Leu Lys Ala Pro Ile Pro Val Glu
                325                 330                 335

Leu Ile Val Val Val Ala Ala Thr Leu Ala Ser His Phe Gly Lys Leu
            340                 345                 350

Asn Gly Asn Tyr Asn Ser Ser Ile Ala Gly His Ile Pro Thr Gly Phe
        355                 360                 365

Met Pro Pro Lys Ala Pro Asp Trp Ser Leu Ile Pro Asn Val Ala Val
    370                 375                 380

Asp Ala Ile Ala Ile Ser Ile Ile Gly Phe Ala Ile Thr Val Ser Leu
385                 390                 395                 400

Ser Glu Met Phe Ala Lys Lys His Gly Tyr Thr Val Lys Ala Asn Gln
                405                 410                 415

Glu Met Tyr Ala Ile Gly Phe Cys Asn Ile Ile Pro Ser Phe Phe His
            420                 425                 430

Cys Ile Thr Thr Ser Ala Ala Leu Ala Lys Thr Leu Val Lys Glu Ser
        435                 440                 445

Thr Gly Cys Gln Thr Gln Leu Ser Ala Ile Val Thr Ala Leu Val Leu
    450                 455                 460

Leu Leu Val Leu Leu Val Ile Ala Pro Leu Phe Tyr Ser Leu Gln Lys
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Cys Val Leu Gly Val Ile Thr Ile Val Asn Leu Arg Gly Ala Leu Leu
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Lys Phe Arg Asp Leu Pro Lys Met Trp Arg Leu Ser Arg Met Asp Thr
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Val Ile Trp Phe Val Thr Met Leu Ser Ser Ala Leu Leu Ser Thr Glu
        515                 520                 525

Ile Gly Leu Leu Val Gly Val Cys Phe Ser Met Phe Cys Val Ile Leu
    530                 535                 540

Arg Thr Gln Lys Pro Lys Asn Ser Leu Leu Gly Leu Glu Glu Glu Ser
545                 550                 555                 560

Glu Thr Phe Glu Ser Ile Ser Thr Tyr Lys Asn Leu Arg Ser Lys Ser
                565                 570                 575

Gly Ile Lys Val Phe Arg Phe Ile Ala Pro Leu Tyr Tyr Ile Asn Lys
            580                 585                 590

Glu Cys Phe Lys Ser Ala Leu Tyr Lys Lys Ala Leu Asn Pro Val Leu
        595                 600                 605

Val Lys Ala Ala Trp Lys Lys Ala Ala Lys Arg Lys Leu Lys Glu Glu
    610                 615                 620

Met Val Thr Phe Arg Gly Asp Pro Asp Glu Val Ser Met Gln Leu Ser
625                 630                 635                 640

His Asp Pro Leu Glu Val His Thr Ile Val Ile Asp Cys Ser Ala Ile
                645                 650                 655

Gln Phe Leu Asp Thr Ala Gly Ile His Thr Leu Lys Glu Val Arg Arg
            660                 665                 670

Asp Tyr Glu Ala Val Gly Ile Gln Val Leu Leu Ala Gln Cys Asn Pro
        675                 680                 685

Ser Val Arg Asp Ser Leu Ala Arg Gly Glu Tyr Cys Lys Lys Glu Glu
    690                 695                 700

Glu Thr Leu Leu Phe Tyr Ser Leu Ser Glu Ala Val Ala Phe Ala Glu
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Asp Ser Gln Asn Gln Lys Gly Val Cys Val Val Asn Gly Leu Ser Leu
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Tyr Thr Ser Phe Phe Ala Asn Leu Ile Tyr Phe Leu Asn Gly Thr Ser
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Arg His Val Asn Val Gly Ile Phe Ser Leu Leu Cys Leu Met Val Gly
50 55 60

Gln Val Val Asp Arg Glu Leu Gln Leu Ala Gly Phe Asp Pro Ser Gln
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Thr Thr

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20 25 30

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35 40 45

Arg His Ile Ser Val Gly Ile Phe Gly Ile Leu Cys Leu Met Ile Gly
50 55 60

Glu Val Val Asp Arg Glu Leu His Lys Ala Cys Pro Asp Thr Asp Ala
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His Thr

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Ser Asp Ile Val Ser Gly Ile Ser Thr Gly Leu Val Ala Val Leu Gln
1 5 10 15

Gly Leu Ala Phe Ala Leu Leu Val Asn Ile Pro Pro Ala Tyr Gly Leu
20 25 30

Tyr Ala Ala Phe Phe Pro Val Ile Thr Tyr Phe Phe Leu Gly Thr Ser
35 40 45

Arg His Ile Ser Val Gly Pro Phe Pro Val Leu Ser Met Met Val Gly
50 55 60

Val Val Val Thr Arg Val Val Ser Asp Pro Asn Ala Ser Ser Glu Leu
65 70 75 80

Ser Ser Ser Ser Thr Glu Asn Asp Ser Phe Ile
85 90

<210> 73
<211> 97
<212> PRT
<213> Mus musculus
<400> 73

Ser Asp Ile Ile Ser Gly Val Ser Thr Gly Leu Val Gly Thr Leu Gln
1 5 10 15

Gly Met Ala Tyr Ala Leu Leu Ala Ala Val Pro Val Gln Phe Gly Leu
20 25 30

Tyr Ser Ala Phe Phe Pro Ile Leu Thr Tyr Phe Val Phe Gly Thr Ser
35 40 45

Arg His Ile Ser Val Gly Pro Phe Pro Val Val Ser Leu Met Val Gly
50 55 60

Ser Val Val Leu Ser Met Ala Pro Asp Asp His Phe Leu Val Pro Ser
65 70 75 80

Gly Asn Gly Ser Ala Leu Asn Ser Thr Thr Leu Asp Thr Gly Thr Arg
85 90 95

Asp

<210> 74
<211> 91
<212> PRT
<213> Mus musculus
<400> 74

Gly Asp Leu Val Ser Gly Ile Ser Thr Gly Val Leu Gln Leu Pro Gln
1 5 10 15

Gly Leu Ala Phe Ala Met Leu Ala Ala Val Pro Pro Val Phe Gly Leu
20 25 30

Tyr Ser Ser Phe Tyr Pro Val Ile Met Tyr Cys Phe Phe Gly Thr Ser
35 40 45

Arg His Ile Ser Ile Gly Pro Phe Ala Val Ile Ser Leu Met Ile Gly
50 55 60

```
Gly Val Ala Val Arg Leu Val Pro Asp Asp Ile Val Ile Pro Gly Gly
65                  70                  75                  80

Val Asn Ala Thr Asn Gly Thr Glu Ala Arg Asp
                85                  90

<210>  75
<211>  85
<212>  PRT
<213>  Mus musculus
<400>  75

Gly Asp Leu Leu Ser Gly Leu Ser Val Ala Ile Met Gln Leu Pro Gln
1               5                   10                  15

Gly Leu Ala Tyr Ala Leu Leu Ala Gly Leu Pro Pro Met Phe Gly Leu
            20                  25                  30

Tyr Ser Ser Phe Tyr Pro Val Phe Ile Tyr Phe Leu Phe Gly Thr Ser
        35                  40                  45

Arg His Ile Ser Val Gly Thr Phe Ala Val Met Ser Val Met Val Gly
    50                  55                  60

Ser Val Thr Glu Ser Leu Thr Ala Asp Lys Ala Phe Val Gln Gly Leu
65                  70                  75                  80

Asn Ala Thr Ala Asp
                85

<210>  76
<211>  93
<212>  PRT
<213>  Mus musculus
<400>  76

Pro Asp Thr Val Ser Gly Ile Met Leu Ala Val Gln Gln Val Ala Gln
1               5                   10                  15

Gly Leu Ser Phe Ala Met Leu Ser Ser Val His Pro Val Phe Gly Leu
            20                  25                  30

Tyr Gly Ser Leu Phe Pro Ala Ile Ile Tyr Ala Ile Phe Gly Met Gly
        35                  40                  45

Arg His Val Ala Thr Gly Thr Phe Ala Leu Thr Ser Leu Ile Ser Ala
    50                  55                  60

Asn Ala Val Glu Arg Leu Val Pro Gln Ser Ser Arg Asn Leu Thr Thr
65                  70                  75                  80

Gln Ser Asn Ser Ser Val Leu Gly Leu Ser Glu Phe Glu
                85                  90


<210>  77
<211>  97
<212>  PRT
<213>  Mus musculus
<400>  77

Gly Asp Leu Leu Ala Gly Leu Ser Val Gly Leu Ala Gln Val Pro Gln
1               5                   10                  15

Gly Leu Ile Leu Ser Leu Leu Thr Arg Gln Leu Ile Pro Pro Leu Asn
            20                  25                  30
```

Val Thr Tyr Ala Ala Phe Cys Ser Ser Val Ile Tyr Val Ile Phe Gly
35 40 45

Ser Cys His Gln Met Ser Ile Gly Pro Phe Phe Leu Val Ser Ala Leu
50 55 60

Met Ile Asn Val Leu Lys Asp Arg Pro Phe Asn Asn Gly His Leu Ile
65 70 75 80

Leu Gly Thr Phe Val Lys Asp Asp Phe Ser Val Pro Thr Phe Tyr Leu
85 90 95

Ser

<210> 78
<211> 94
<212> PRT
<213> Mus musculus
<400> 78

Pro Asp Leu Leu Gly Gly Leu Ser Gly Gly Cys Ile Gln Val Pro Gln
1 5 10 15

Gly Met Ala Phe Ala Leu Leu Ala Asn Leu Pro Ala Val Asn Gly Leu
20 25 30

Tyr Ser Ser Phe Phe Pro Leu Leu Thr Tyr Phe Phe Leu Gly Gly Ile
35 40 45

His Gln Met Val Pro Gly Thr Phe Ala Val Ile Ser Ile Leu Val Gly
50 55 60

Asn Ile Cys Leu Gln Leu Ala Pro Glu Ser Lys Phe Gln Ile Phe Asn
65 70 75 80

Asn Val Thr Asn Glu Thr Tyr Val Asp Thr Ala Ala Met Glu
85 90

<210> 79
<211> 78
<212> PRT
<213> Mus musculus
<400> 79

Leu Asp Phe Ile Ala Gly Leu Ser Val Gly Leu Thr Val Ile Pro Gln
1 5 10 15

Ala Leu Ala Tyr Ala Glu Val Ala Gly Leu Pro Pro Gln Tyr Gly Leu
20 25 30

Tyr Ser Ala Phe Met Gly Cys Phe Val Tyr Phe Phe Leu Gly Thr Ser
35 40 45

Arg Asp Val Thr Leu Gly Pro Thr Ala Ile Met Ser Leu Leu Val Ser
50 55 60

Phe Tyr Thr Phe Arg Glu Pro Ala Tyr Ala Val Leu Leu Ala
65 70 75

<210> 80
<211> 3635
<212> DNA
<213> Xenopus laevis
<400> 80
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gaaccaacat tccaagaaga aaatgaaaga aaagagcctg ttcggaaaac tctccaggac

agggtgaaaa agaattgcag ctgtacatca aaaaaggctt tgtttatagt caagaagttt

ctccctattc tgaattggtt acccaaatac agatggaaag aatggttttt aagtgacctg

atctctggag tcagcacagg tcttgttggt accttgcaag gcctggcatt tgcattgctt

gctgcagtcc ctgttggata tggcctctac tcttcttttt tccctatctt gacttatttt

ttcctgggaa catcaaaaca catttctgtg ggaccattcc cagtggtcag tttgatggtg

ggatcagttg ttctgtctat tgctccagat gaaaaatttg caatattagg caactctaca

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ggaacactca gctttctaat tggaattata cagcttgcac ttggcgtatt tcaaattggc

tttattatca gatatttggc agatccatta gttggtggtt ttactacagc tgcagccttc

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gtactctcta tcatatatac aataatagat atctttacca acattgcgaa aaccaacatt

gctgatctga ttgctggact tctaacattt gttgtttgcg ttgtggtgaa agaaataaat

gatcgataca aacgcatctt tcgggtacct attcctatag aagtaattgt gaccatagta

gctacaggga tttcatatgg cgtcaatctg gaaaagaaat ataatgcagg gattgtgaag

acaattccaa ctggattcat accacctatg acaccagacg tgagcctctt ctcacaaata

ggtagttcag cattttccat cggtattgtt gcctatgctg tagctgtgtc tgtgggaaaa

gtttatgcta caaagcacaa ctatgaagtt gatggaaatc aggagttcat tgcctttgga

ataagcaatc tattcggtgg agtattttct tgcttttgtg ccaccacggc cctatcacgt

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ctagcggcca ttgtcattgc caatctgaag gggatgtttt ggcaagtttt tgatgtacct

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gttgggtttg atgcggtgaa agtttataac aagagaacaa aagcactgag gaaaatacaa

aagcttatta aaaaaggaca actaagatca acaaagaatg gcattattag cagcacagga

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gaagcagttc aaacaaaaga agtagagatc caagtagact ggaactcaga acttccaata

aaagtatctg tgcccaaagt ctccattcac agcatcattt ttgattttgg gcaaatccac

ttcattgatg tggttgcagt gagatctctt aaagtgatat ttaaagaatt taagagaatt

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aacatctact aataccatgc tatgcatatg ataaaaatgt tatgaatgtt tatgaattat

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aaggaatatg tgcaacattc taatgaataa acatataaac aaaaataaaa ttgagtgttg

aggcaaagaa catgactgtt acccaaacat ttaagccaca acatcaaatt cttcaaattc

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<210> 81
<211> 778
<212> PRT
<213> Xenopus laevis
<400> 81

Met Ala Thr Ala Arg Met Asp Ile Pro Ser Pro Gly Tyr Asn Gln Tyr
1 5 10 15

Leu Val His Arg Ser Val Tyr Ser Glu Pro Thr Phe Gln Glu Glu Asn
20 25 30

Glu Arg Lys Glu Pro Val Arg Lys Thr Leu Gln Asp Arg Val Lys Lys
35 40 45

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Asn Cys Ser Cys Thr Ser Lys Lys Ala Leu Phe Ile Val Lys Lys Phe
    50                  55                  60

Leu Pro Ile Leu Asn Trp Leu Pro Lys Tyr Arg Trp Lys Glu Trp Phe
65                  70                  75                  80

Leu Ser Asp Leu Ile Ser Gly Val Ser Thr Gly Leu Val Gly Thr Leu
                85                  90                  95

Gln Gly Leu Ala Phe Ala Leu Leu Ala Ala Val Pro Val Gly Tyr Gly
            100                 105                 110

Leu Tyr Ser Ser Phe Phe Pro Ile Leu Thr Tyr Phe Phe Leu Gly Thr
        115                 120                 125

Ser Lys His Ile Ser Val Gly Pro Phe Pro Val Val Ser Leu Met Val
    130                 135                 140

Gly Ser Val Val Leu Ser Ile Ala Pro Asp Glu Lys Phe Ala Ile Leu
145                 150                 155                 160

Gly Asn Ser Thr Gly Leu Asn Lys Thr Ile Ile Asp Thr Val Ala Arg
                165                 170                 175

Asp Ala Ala Arg Val Ala Val Ser Gly Thr Leu Ser Phe Leu Ile Gly
            180                 185                 190

Ile Ile Gln Leu Ala Leu Gly Val Phe Gln Ile Gly Phe Ile Ile Arg
        195                 200                 205

Tyr Leu Ala Asp Pro Leu Val Gly Gly Phe Thr Thr Ala Ala Ala Phe
    210                 215                 220

Gln Val Phe Val Ser Gln Phe Lys Leu Val Leu Asn Val Pro Thr Lys
225                 230                 235                 240

Asn Tyr Asn Gly Val Leu Ser Ile Ile Tyr Thr Ile Ile Asp Ile Phe
                245                 250                 255

Thr Asn Ile Ala Lys Thr Asn Ile Ala Asp Leu Ile Ala Gly Leu Leu
            260                 265                 270

Thr Phe Val Val Cys Val Val Val Lys Glu Ile Asn Asp Arg Tyr Lys
        275                 280                 285

Arg Ile Phe Arg Val Pro Ile Pro Ile Glu Val Ile Val Thr Ile Val
    290                 295                 300

Ala Thr Gly Ile Ser Tyr Gly Val Asn Leu Glu Lys Lys Tyr Asn Ala
305                 310                 315                 320

Gly Ile Val Lys Thr Ile Pro Thr Gly Phe Ile Pro Pro Met Thr Pro
                325                 330                 335

Asp Val Ser Leu Phe Ser Gln Ile Gly Ser Ser Ala Phe Ser Ile Gly
            340                 345                 350

Ile Val Ala Tyr Ala Val Ala Val Ser Val Gly Lys Val Tyr Ala Thr
        355                 360                 365

Lys His Asn Tyr Glu Val Asp Gly Asn Gln Glu Phe Ile Ala Phe Gly
    370                 375                 380

Ile Ser Asn Leu Phe Gly Gly Val Phe Ser Cys Phe Cys Ala Thr Thr
385                 390                 395                 400

Ala Leu Ser Arg Thr Ala Ile Gln Glu Ser Thr Gly Gly Lys Thr Gln
                405                 410                 415
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Ile Ala Gly Ile Ile Ser Ala Gly Ile Val Leu Ile Ala Ile Val Ala
            420                 425                 430

Leu Gly Lys Leu Leu Glu Pro Leu Gln Lys Ser Val Leu Ala Ala Ile
        435                 440                 445

Val Ile Ala Asn Leu Lys Gly Met Phe Trp Gln Val Phe Asp Val Pro
    450                 455                 460

Arg Leu Trp Lys Gln Asn Lys Trp Asp Ser Val Ile Trp Val Phe Thr
465                 470                 475                 480

Cys Ile Ala Ser Ile Leu Leu Gly Leu Asp Leu Gly Leu Leu Ala Gly
                485                 490                 495

Leu Leu Phe Gly Leu Val Thr Ile Ile Leu Arg Val Gln Phe Pro Ser
            500                 505                 510

Cys Gly Ala Leu Gly Ser Val Pro Gly Thr Asp Ile Tyr Lys Asn Val
        515                 520                 525

Lys Glu Tyr Lys Asn Leu Ile Glu Pro Glu Gly Val Lys Ile Ile Arg
    530                 535                 540

Tyr Thr Ser Gly Met Phe Tyr Gly Asn Ile Asp Gly Phe Lys Asn Ala
545                 550                 555                 560

Ile Lys Ser Ile Val Gly Phe Asp Ala Val Lys Val Tyr Asn Lys Arg
                565                 570                 575

Thr Lys Ala Leu Arg Lys Ile Gln Lys Leu Ile Lys Lys Gly Gln Leu
            580                 585                 590

Arg Ser Thr Lys Asn Gly Ile Ile Ser Ser Thr Gly Ala Asp Asn Glu
        595                 600                 605

Gly Tyr Glu Pro Asp Asp Asp Pro Glu Asp Pro Glu Gln Glu Asn Asn
    610                 615                 620

Glu Ala Val Gln Thr Lys Glu Val Glu Ile Gln Val Asp Trp Asn Ser
625                 630                 635                 640

Glu Leu Pro Ile Lys Val Ser Val Pro Lys Val Ser Ile His Ser Ile
                645                 650                 655

Ile Phe Asp Phe Gly Gln Ile His Phe Ile Asp Val Val Ala Val Arg
            660                 665                 670

Ser Leu Lys Val Ile Phe Lys Glu Phe Lys Arg Ile Asp Val Glu Pro
        675                 680                 685

Tyr Ile Ala Ala Tyr Glu Asp Gly Val Leu Gln Lys Met Glu Lys Cys
    690                 695                 700

Phe Phe Phe Asp Glu Val Ile Lys Arg Asp Ile Phe Phe Leu Thr Val
705                 710                 715                 720

His Asp Ala Val Leu His Ile Glu Asn Leu Arg Lys Phe Tyr Asp Gly
                725                 730                 735

His Asp Pro Leu Leu Glu Lys Ile Ser Leu Met Gln Glu Ser Lys Glu
            740                 745                 750

Pro Leu Glu Phe Thr Thr Thr Asp Pro Thr Asp Gln Glu Leu Asp Ala
        755                 760                 765

Gln Glu Gly Ala Leu Arg Ser Leu Ala His
    770                 775
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<210> 82
<211> 2640
<212> DNA
<213> Xenopus laevis
<400> 82
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attttgtggc aagatctgtt tattcagacc agtccttcaa ggaagaacat gagaagagag

aaattgttca cagaccactt aaacaaaagt taaaaaaaac attcagctgt acccctaaaa

aggcatacag ggtagccaaa acttttatac ctgtcttgga ctggcttccc aaatacagat

ggaaagaatg gattgtgtca gatattatag ctggagtcag tgtaggtcta atttcagctt

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ctttctttcc tgttttaaca tactgcttct tggggacctc taagcacatt tcagttgggc

cattcccagt ggtatgtctg atggttggga ttgttactat atctatggct ccagatgatc

aattttccgt tataaccaat ggcactacag tcataaacac aacggccagg gatgcagcta

gaattaacat ctgtgggaca ctctcctttcc tgattggaat cctacagctt tttctgggaa

tatttcggat tggattcatt gttaggtacc tggcagatcc actgatcgga ggcttcacca

cagctgccgc tttccaagtg actgtttcac aaataaaaac catcctcaat gttcctgcca

aaaactacaa tggtgtgctt tccataatat atacaattat agatatattt tccaacattg

ctcaaactaa ttttgccgac ctcattgctg ggctgctgac tttagtaatt gttctagcgg

taaaggaggt aaatgatcgc tttaaagaga agattcgtgt gcctattcct atagagatta

ttgtgacaat tgtagctaca ggaatttcct atggagcgaa cctagcaggg aaatacaatg

caggaataat aaagaccatt ccgagcggat tcattccagc tatgtcacca gatgtcagct

tgttttcctc gctcattagt tctgcgtttt ccactggaat agttgcatat gctattgtaa

tatcagttgg aaaggtctat gggacaaaga ataactacag ggttgatgga aatcaggaat

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tgcaaaagtc ggtgttggca gctattgttg tagccaattt aaagggaatg ttcatgcagg

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taagaattat tcgattttct ggaggaattt tctatggcaa tattgaaggt ttgaagaatg

gcattaaaaa aatagttgga tttgatgcta ccagagtttt tgacaagagg gcaaaggctc

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tcagtggtac agggatcgat aatgagggtt tcgaactaga tgatgaacaa gatgacccag

aattagaaca aaaccacgac attcacacaa atgaagtgga gatccaagtg gattggaatt

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aaatatttgt acaacaaaag aaagaaatgc tgcaactgtt ttactgtatg ttattgaaag

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<210> 83
<211> 769
<212> PRT
<213> Xenopus laevis
<400> 83

Met Glu Ser Ser Thr Asp Ser Lys Tyr Phe Val Ala Arg Ser Val Tyr
1 5 10 15

Ser Asp Gln Ser Phe Lys Glu Glu His Glu Lys Arg Glu Ile Val His
20 25 30

Arg Pro Leu Lys Gln Lys Leu Lys Lys Thr Phe Ser Cys Thr Pro Lys
35 40 45

Lys Ala Tyr Arg Val Ala Lys Thr Phe Ile Pro Val Leu Asp Trp Leu
50 55 60

Pro Lys Tyr Arg Trp Lys Glu Trp Ile Val Ser Asp Ile Ile Ala Gly
65 70 75 80

Val Ser Val Gly Leu Ile Ser Ala Leu Gln Gly Leu Ala Phe Gly Leu
85 90 95

Leu Ala Gly Val Pro Ile Gln Phe Gly Leu Tyr Ser Ser Phe Phe Pro
100 105 110

Val Leu Thr Tyr Cys Phe Leu Gly Thr Ser Lys His Ile Ser Val Gly
115 120 125

Pro Phe Pro Val Val Cys Leu Met Val Gly Ile Val Thr Ile Ser Met
130 135 140

Ala Pro Asp Asp Gln Phe Ser Val Ile Thr Asn Gly Thr Thr Val Ile
145 150 155 160

Asn Thr Thr Ala Arg Asp Ala Ala Arg Ile Asn Ile Cys Gly Thr Leu
165 170 175

Ser Phe Leu Ile Gly Ile Leu Gln Leu Phe Leu Gly Ile Phe Arg Ile
180 185 190

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Gly Phe Ile Val Arg Tyr Leu Ala Asp Pro Leu Ile Gly Gly Phe Thr
        195                 200                 205

Thr Ala Ala Ala Phe Gln Val Thr Val Ser Gln Ile Lys Thr Ile Leu
    210                 215                 220

Asn Val Pro Ala Lys Asn Tyr Asn Gly Val Leu Ser Ile Ile Tyr Thr
225                 230                 235                 240

Ile Ile Asp Ile Phe Ser Asn Ile Ala Gln Thr Asn Phe Ala Asp Leu
                245                 250                 255

Ile Ala Gly Leu Leu Thr Leu Val Ile Val Leu Ala Val Lys Glu Val
            260                 265                 270

Asn Asp Arg Phe Lys Glu Lys Ile Arg Val Pro Ile Pro Ile Glu Ile
        275                 280                 285

Ile Val Thr Ile Val Ala Thr Gly Ile Ser Tyr Gly Ala Asn Leu Ala
    290                 295                 300

Gly Lys Tyr Asn Ala Gly Ile Ile Lys Thr Ile Pro Ser Gly Phe Ile
305                 310                 315                 320

Pro Ala Met Ser Pro Asp Val Ser Leu Phe Ser Ser Leu Ile Ser Ser
                325                 330                 335

Ala Phe Ser Thr Gly Ile Val Ala Tyr Ala Ile Val Ile Ser Val Gly
            340                 345                 350

Lys Val Tyr Gly Thr Lys Asn Asn Tyr Arg Val Asp Gly Asn Gln Glu
        355                 360                 365

Phe Ile Ala Tyr Gly Ile Ser Asn Met Phe Gly Gly Ile Phe Ser Cys
    370                 375                 380

Phe Cys Ala Ser Thr Ala Leu Ser Arg Thr Ala Ile Gln Glu Gly Thr
385                 390                 395                 400

Gly Gly Lys Ser Gln Ile Ala Ser Met Ile Ser Ala Leu Met Val Leu
                405                 410                 415

Ile Ala Ile Val Ala Ile Gly Arg Leu Leu Glu Pro Leu Gln Lys Ser
            420                 425                 430

Val Leu Ala Ala Ile Val Val Ala Asn Leu Lys Gly Met Phe Met Gln
        435                 440                 445

Val Arg Asp Ile Pro Val Leu Trp Arg Gln Asn Arg Trp Asp Ala Val
    450                 455                 460

Ile Trp Val Phe Thr Cys Val Ser Ala Ile Ile Leu Gly Leu Asp Leu
465                 470                 475                 480

Gly Leu Leu Ala Gly Leu Val Phe Gly Leu Leu Thr Val Val Leu Arg
                485                 490                 495

Val Gln Phe Pro Ser Cys Ser Ser Leu Ala Asn Ile His Asn Thr Asp
            500                 505                 510

Leu Tyr Lys Asp Val Lys Met Tyr Lys Asp Leu Ile Glu Pro Gly Gly
        515                 520                 525

Val Arg Ile Ile Arg Phe Ser Gly Gly Ile Phe Tyr Gly Asn Ile Glu
    530                 535                 540

Gly Leu Lys Asn Gly Ile Lys Lys Ile Val Gly Phe Asp Ala Thr Arg
545                 550                 555                 560
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Val Phe Asp Lys Arg Ala Lys Ala Leu Arg Met Ile Gln Asn Leu Ile
                565                 570                 575

Lys Lys Gly Gln Leu Gly Ala Thr Trp Asn Gly Ile Val Ser Gly Thr
            580                 585                 590

Gly Ile Asp Asn Glu Gly Phe Glu Leu Asp Asp Glu Gln Asp Asp Pro
        595                 600                 605

Glu Leu Glu Gln Asn His Asp Ile His Thr Asn Glu Val Glu Ile Gln
    610                 615                 620

Val Asp Trp Asn Ser Glu Leu Pro Leu Thr Val Ser Val Pro Lys Val
625                 630                 635                 640

Thr Val His Thr Ile Val Phe Asp Phe Ala Pro Val Thr Phe Leu Asp
                645                 650                 655

Val Met Ala Val Lys Asn Leu Lys Leu Ile Ile Lys Glu Phe Lys Arg
            660                 665                 670

Ile Asp Val Asp Ile Tyr Ile Ala Ala Cys Asp Asp Asn Val Tyr Asn
        675                 680                 685

Lys Met Glu Val Cys Gly Phe Phe Asp Asp Ala Ile Lys Pro Asp Ile
    690                 695                 700

Phe Phe Leu Thr Val His Asp Ala Met Leu Tyr Ile Glu Lys Glu Arg
705                 710                 715                 720

Asn Phe Glu Ser Ala Ser Asp Pro Ile Leu Glu Lys Ile Ser Leu Met
                725                 730                 735

Gln Glu Asn Lys Gly Gln Leu Asp Phe Leu Ile Glu Pro Val Asp Pro
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Val His Gln Glu Leu Ala Ala His Glu Glu Ala Ile Lys Arg Tyr Ala
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Ser
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<400> 84

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Gly Asn Ser Gln Tyr Leu Leu Ala Arg Pro Ile Tyr Thr Gln Pro Thr
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Phe Glu Lys Leu Asn Met Glu Lys Thr Pro Lys Lys Asn Thr Arg Lys
        35                  40                  45

Pro Phe Lys Asn Arg Leu Gln Lys Thr Phe Ser Cys Thr Ser Thr Lys
    50                  55                  60

Ala Val His Met Val Lys Lys Tyr Ile Pro Val Leu Asn Trp Leu Pro
65                  70                  75                  80

Lys Tyr Ser Trp Lys Ser Leu Phe Val His Asp Leu Ile Ser Gly Val
                85                  90                  95

Ser Thr Gly Met Val Gly Thr Leu Gln Gly Leu Ala Phe Ala Leu Leu
            100                 105                 110

Ala Glu Val Pro Val Gly Tyr Gly Ile Tyr Ser Ser Phe Phe Pro Ile
        115                 120                 125

Leu Thr Tyr Phe Phe Leu Gly Thr Ser Lys His Ile Ser Val Gly Pro
    130                 135                 140

Phe Pro Val Ile Ser Leu Met Val Gly Ser Val Val Leu Ser Met Ala
145                 150                 155                 160

Pro Asn Glu Asn Phe Ile Val Tyr Asn Thr Thr Asn Leu Asn Glu Thr
                165                 170                 175

Glu Met Ile Ile Asp Thr Glu Ala Arg Asp Ala Ala Arg Val Leu Val
            180                 185                 190

Ser Gly Thr Leu Ser Phe Leu Ile Gly Ile Ile Gln Leu Val Leu Gly
        195                 200                 205

Ala Leu Gln Phe Gly Phe Ile Val Arg Tyr Leu Ala Glu Pro Leu Val
    210                 215                 220

Arg Gly Phe Thr Thr Gly Ala Ala Phe Gln Ala Phe Ile Ser Gln Met
225                 230                 235                 240

Lys Leu Ile Leu Asn Val Pro Thr Asn Thr His Ser Gly Met Phe Ser
                245                 250                 255

Thr Phe Tyr Thr Met Asn Asp Ile Phe Ser Asn Ile Ser Lys Thr Asn
            260                 265                 270

Val Ala Asp Leu Ile Ala Gly Leu Leu Thr Ile Phe Val Cys Val Ala
        275                 280                 285

Val Lys Glu Ile Asn Glu Arg Tyr Lys Asn Phe Leu Arg Ile Pro Ile
    290                 295                 300

Pro Ile Glu Ile Ile Val Ser Leu Ile Ala Ala Trp Ile Ser Tyr Gly
305                 310                 315                 320

Val Asp Leu Glu Asn Lys Tyr Asn Ala Gly Thr Val Lys Asn Ile Pro
                325                 330                 335

Ser Gly Phe Ile Pro Pro Met Met Pro Asp Val Ser Met Phe Pro Gln
            340                 345                 350

Ile Ile Ser Ser Ala Ile Ser Ile Gly Ile Val Ala Tyr Ala Val Ala
        355                 360                 365
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Val Ser Leu Gly Lys Val Phe Ala Thr Lys Tyr Asn Tyr Ala Ile Asp
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Gly Asn Gln Glu Phe Val Ala Phe Gly Val Ser Asn Ile Phe Ser Gly
385                 390                 395                 400

Phe Phe Ser Cys Phe Cys Ala Thr Thr Ala Leu Ser Arg Thr Ala Ile
                405                 410                 415

Gln Glu Ser Thr Gly Gly Lys Thr Gln Ile Ala Gly Leu Ile Ser Ala
            420                 425                 430

Ala Thr Ile Ile Ile Thr Met Phe Val Leu Gly Gln Phe Leu Gln Pro
        435                 440                 445

Leu Gln Lys Ser Val Leu Ala Ala Ile Val Ile Ser Asn Leu Lys Gly
    450                 455                 460

Met Phe Trp Gln Ala Leu Asp Ile Pro Arg Leu Trp Lys Gln Asn Lys
465                 470                 475                 480

Trp Asp Ala Ala Ile Trp Ile Phe Ala Cys Phe Ser Thr Ile Ile Leu
                485                 490                 495

Asp Leu Asp Leu Gly Leu Leu Cys Gly Leu Met Phe Gly Leu Phe Thr
            500                 505                 510

Val Ile Leu Arg Ile Gln Phe Pro Ser Cys His Ser Leu Gly Asn Leu
        515                 520                 525

Pro Gly Thr Glu Ile Tyr Arg Asp Leu Lys Lys Tyr Lys Asn Val Val
    530                 535                 540

Glu Gln Glu Gly Ile Lys Ile Ile Arg Phe Ser Ser Gly Ile Phe Tyr
545                 550                 555                 560

Gly Asn Val Asp Ser Leu Lys Asn Gly Ile Lys Ser Ile Val Gly Phe
                565                 570                 575

Asp Ser Val Arg Val Phe Asn Lys Arg Ala Lys Ala Glu Leu Lys Ile
            580                 585                 590

Ser Glu Leu Ile Lys Lys Gly Gln Leu Lys Val Thr Lys Asn Gly Ile
        595                 600                 605

Ile Thr Asn Thr Phe Thr Glu Asp Ser Glu Ser Asp Glu Glu Ser Gln
    610                 615                 620

Gln Phe Glu Asn Pro Gln Asn Lys Lys Glu Glu Thr Glu Phe Gln Gly
625                 630                 635                 640

Asp Trp Asn Ser Asp Leu Pro Val Leu Asn Ser Val Pro Lys Val Phe
                645                 650                 655

Ile His Ser Ile Ile Leu Asp Phe Gly His Val Asn Phe Leu Asp Val
            660                 665                 670

Val Ala Val Thr Ser Leu Lys Leu Ile Leu Lys Asp Phe Arg Arg Ile
        675                 680                 685

Ala Val Asp Val Tyr Ile Ala Gly Cys Asp Asp Glu Ile Phe Glu Lys
    690                 695                 700

Leu Glu Val Cys Gly Phe Phe Glu Asp Asn Asn Lys Pro Asp Ile Cys
705                 710                 715                 720

Phe Leu Ser Val His Glu Ala Val Ile Tyr Ile Leu Asn Gln Arg Glu
                725                 730                 735
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Phe Cys Ser Asp Gln Asn Ser Leu Gly Lys Ala Ala Val Val Lys Asn
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Glu His Val Ser Ser Leu Glu Leu Asp Leu Gln Asp Glu Glu Asn Arg
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Cys Thr Cys Asn Ser Lys Gln Leu Lys Lys Thr Phe Ile Gly Phe Phe
    50                  55                  60

Pro Val Leu Arg Trp Leu Pro Lys Tyr Asp Phe Lys Glu Asn Thr Trp
65                  70                  75                  80

Gly Asp Val Met Ser Gly Leu Ile Ile Gly Ile Ile Leu Val Pro Gln
                85                  90                  95

Ala Ile Ala Tyr Ser Leu Leu Ala Gly Leu Lys Pro Ile Tyr Ser Leu
            100                 105                 110

Tyr Thr Ser Phe Phe Ala Asn Ile Ile Tyr Phe Leu Met Gly Thr Ser
        115                 120                 125

Arg His Val Ser Val Gly Ile Phe Ser Leu Ile Ser Leu Met Val Gly
    130                 135                 140

Gln Val Val Asp Arg Glu Val Gln Leu Ala Gly Phe Asp Leu Asp Asp
145                 150                 155                 160

Asp Ala Val Pro Gln Ile Asn Asn Phe Asn Met Ser Asp Leu Asn Ile
                165                 170                 175

Thr Arg Ser Ile Asn Ile Ser Met Gly Leu Met Asp Ile Glu Cys Gly
            180                 185                 190

Lys Glu Cys Tyr Ala Ile Ser Val Ala Ala Ile Leu Thr Phe Thr Ala
        195                 200                 205

Gly Ile Tyr Gln Val Ile Met Gly Ser Phe Arg Leu Gly Phe Leu Ser
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Met Tyr Leu Ser Glu Pro Met Leu Asp Gly Phe Ala Thr Gly Ala Ser
225                 230                 235                 240

Leu Thr Ile Leu Thr Ala Gln Val Lys Tyr Leu Leu Gly Ile Lys Ile
                245                 250                 255

Pro Arg Ser Pro Gly Ile Gly Met Leu Val Thr Thr Trp Tyr Asn Ile
            260                 265                 270

Phe Ala Asn Ile His His Ser Asn Tyr Cys Asp Ile Ile Thr Ser Ala
        275                 280                 285

Ile Cys Ile Ala Val Leu Val Ala Ala Lys Glu Ile Gly Asp Arg Tyr
    290                 295                 300

Lys Glu Lys Ile Lys Ile Pro Leu Pro Thr Glu Leu Val Val Ile Val
305                 310                 315                 320

Val Ala Thr Val Val Ser His Tyr Cys Asn Leu Lys Glu Val Tyr Gly
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Ser Ala Val Ser Gly Val Ile Pro Thr Gly Phe Ile Pro Pro Gln Val
            340                 345                 350

Pro Asn Phe Ser Leu Phe Gly Lys Ile Ala Val Asp Ala Ile Pro Leu
        355                 360                 365

Ala Val Ile Ser Phe Ala Phe Thr Ile Ser Leu Ser Glu Met Phe Ala
    370                 375                 380

Lys Lys Tyr Ala Tyr Thr Val Glu Ala Asn Gln Glu Met Phe Ala Ile
385                 390                 395                 400
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Gly Phe Cys Asn Ile Ile Pro Ser Phe Phe His Cys Phe Ala Thr Ser
                405                 410                 415

Ala Ala Leu Ala Lys Thr Leu Val Lys Thr Ser Thr Gly Cys Met Thr
            420                 425                 430

Gln Val Ser Ser Val Ile Ser Ala Ile Val Val Leu Leu Val Leu Leu
        435                 440                 445

Phe Phe Ala Pro Leu Phe Tyr Ser Leu Gln Lys Cys Val Leu Ala Cys
    450                 455                 460

Ile Ile Ile Val Ser Leu Arg Gly Ala Leu Arg Lys Phe Arg Asp Leu
465                 470                 475                 480

Pro Thr Leu Trp Arg Leu Asn Lys Ile Asp Ala Val Val Trp Cys Val
                485                 490                 495

Thr Val Ala Ala Ala Ala Leu Val Ser Thr Glu Val Gly Leu Met Val
            500                 505                 510

Gly Val Ile Phe Ser Met Leu Cys Leu Ile Leu Arg Ser Gln Leu Pro
        515                 520                 525

Tyr Thr Thr Met Leu Asn Gln Ile Glu Asp Thr Val Phe Tyr Glu Asp
    530                 535                 540

Cys Gln Lys Tyr Asp Asn Leu Leu Pro Ile Pro Lys Val Lys Ile Phe
545                 550                 555                 560

Arg Phe Asn Ser Pro Leu His Tyr Ala Asn Lys Gly Tyr Phe Leu Lys
                565                 570                 575

Ala Leu Phe Lys Met Ala Ala Met Asp Pro Gly Leu Val Asn Ala Gln
            580                 585                 590

Arg Lys Lys Met Glu Lys Lys Ala Lys Asn Gln Gly Lys Arg Lys Gln
        595                 600                 605

Val Asp Ala Ala Asn Asn Leu Gly Tyr Gly Glu Thr Gln Ile Glu Leu
    610                 615                 620

Val Glu Lys Arg Asn Asp Leu Gln Thr Ile Ile Leu Asp Cys Ser Cys
625                 630                 635                 640

Ile Ala Phe Leu Asp Ile Thr Gly Met Asn Val Leu Lys Gly Leu Leu
                645                 650                 655

Lys Asp Tyr Lys Glu Val Gln Val Ser Val Leu Leu Ala Cys Cys Ser
            660                 665                 670

Thr Ser Val Ile Asp Ser Leu Ile Arg Gly Gly Tyr Phe Gly Lys Glu
        675                 680                 685

Asn Ser Asp Ile His Lys Leu Leu Phe Tyr Thr Val His Asp Ala Val
    690                 695                 700

Gln Phe Ala Arg Ala Gln Thr Ile Ser Ala Thr Asp Ser Thr Val
705                 710                 715

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<213> Xenopus laevis
<400> 89

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Met Ala Pro Arg Ser Gln Arg Ala Ala Pro Ser Thr Leu Thr Arg Met
35 40 45

Lys Lys Lys Ile Arg Cys Ser Gly Ser Val Ala Lys Ser Leu Leu Leu
50 55 60

Lys Phe Ile Pro Ile Leu Gly Trp Leu Pro Arg Tyr Pro Val Lys Glu
65 70 75 80

Trp Leu Leu Gly Asp Ile Val Ser Gly Leu Ser Val Gly Ile Ile Gln
85 90 95

Leu Pro Gln Gly Leu Ala Tyr Ala Leu Leu Ala Gly Val Pro Pro Val
100 105 110

Phe Gly Leu Tyr Ser Ser Phe Phe Pro Val Leu Leu Tyr Ala Ile Phe
115 120 125

Gly Thr Ser Arg His Ile Ser Pro Gly Thr Phe Ala Val Ile Ser Val
130 135 140

Met Val Gly Ser Val Thr Glu Ser Leu Val Pro Ser Glu Asn Tyr Arg
145 150 155 160

Leu Pro Gly Asn Glu Ser Val Ile Asp Ile Ala Ala Arg Asp Asn Asp
165 170 175

Arg Val Glu Val Ala Ser Ala Leu Thr Phe Leu Val Gly Leu Phe Gln
180 185 190

```
Ile Met Leu Gly Leu Val Gln Val Gly Phe Val Val Thr Tyr Leu Ser
        195                 200                 205

Glu Pro Leu Ile Arg Gly Tyr Thr Ser Ala Ala Ala Ile His Val Thr
    210                 215                 220

Val Ser Gln Met Lys Ser Val Leu Gly Val Gln Ile Ser Gln Arg Ser
225                 230                 235                 240

His Pro Leu Ser Leu Ile Tyr Ala Phe Val Asn Leu Cys Ala Lys Val
                245                 250                 255

Pro Glu Thr Asn Ile Ala Ser Leu Leu Ile Gly Cys Ile Ser Ile Thr
            260                 265                 270

Val Leu Phe Leu Val Lys Phe Leu Asn Asp Lys Tyr Ser Ser Lys Ile
        275                 280                 285

Arg Met Pro Ile Pro Ile Glu Leu Ile Thr Leu Ile Val Ala Thr Gly
    290                 295                 300

Ile Ser Tyr Gly Ala Ser Leu His Gln Val Tyr Gly Val Asp Ile Val
305                 310                 315                 320

Gly Glu Ile Pro Thr Gly Met Lys Ala Pro Met Leu Pro Asn Thr Asn
                325                 330                 335

Ile Phe Ala Arg Val Val Gly Asn Ala Phe Ala Ile Ala Val Val Val
            340                 345                 350

Tyr Ala Phe Thr Ile Ser Leu Ala Lys Met Phe Gly Val Lys His Gly
        355                 360                 365

Tyr Asn Ile Asp Ser Asn Gln Glu Leu Ile Ala Leu Gly Leu Ser Asn
    370                 375                 380

Ser Ile Gly Ser Phe Phe Gln Cys Phe Thr Ile Gly Thr Ala Met Ser
385                 390                 395                 400

Arg Ser Leu Val Gln Glu Ser Thr Gly Gly His Ser Gln Val Ala Ser
                405                 410                 415

Ala Val Ser Ser Leu Val Ile Leu Ile Ile Ile Leu Lys Ala Gly Glu
            420                 425                 430

Leu Phe Glu Thr Leu Pro Lys Ala Ile Leu Ala Ala Val Val Val Val
        435                 440                 445

Asn Leu Lys Gly Ile Tyr Lys Gln Phe Thr Asp Val Pro Met Leu Trp
    450                 455                 460

Arg Ser Asn Lys Phe Asp Leu Leu Val Trp Leu Val Thr Phe Ile Ala
465                 470                 475                 480

Thr Ile Leu Leu Asn Leu Asp Ile Gly Leu Ala Val Ser Val Ala Phe
                485                 490                 495

Ser Leu Leu Thr Val Ile Phe Arg Thr Gln Lys Pro His Tyr Ser Ile
            500                 505                 510

Leu Gly Lys Val His Asn Thr Asp Ile Tyr Arg Asp Val Ala Gln Phe
        515                 520                 525

Asp Gln Val Gln Glu Ile Gln Gly Val Lys Ile Phe Gln Ser Ser Cys
    530                 535                 540

Thr Leu Tyr Phe Ala Asn Ala Asn Leu Tyr Ala Glu Ala Val Lys Lys
545                 550                 555                 560
```

```
Met Cys Gly Thr Asp Val Asp Thr Leu Ile Glu Leu Lys Lys Lys Ala
                565                 570                 575

Met Lys Lys Gln Lys Gln Leu Gln Glu Lys Ala Glu Lys Gln Met Lys
            580                 585                 590

Lys Glu Asn Lys Lys Arg Glu Lys Glu Leu Asp Ser Ile Val Ser Asn
        595                 600                 605

Ser Pro Ala Ala Lys Glu Pro Glu Ile Gln Ile Ala Ala Asp Tyr Glu
    610                 615                 620

Val Leu Glu Glu Ala Gly Leu Asp Tyr Leu Gly Ser Glu Lys Cys Asn
625                 630                 635                 640

Leu His Ser Leu Ile Leu Asp Leu Ser Thr Ala Gly Phe Leu Asp Thr
                645                 650                 655

Val Ser Ile Lys Val Leu Lys Asn Ile Phe Arg Asp Phe Gln Glu Ile
            660                 665                 670

Asp Val Gln Val Tyr Leu Thr Gly Cys Gln Val Tyr Ile Ile Glu Gln
        675                 680                 685

Leu Glu Ala Ala Asn Phe Phe Ser Lys Ser Val Thr Lys Asn Leu Leu
    690                 695                 700

Phe Asn Ser Val His Asp Ala Val Thr Tyr Ile Ser Arg Thr His Gly
705                 710                 715                 720

Gln Gln Asp Thr Lys Gly Ser Asp Thr Cys Leu Asn Thr Lys Ile
                725                 730                 735
```

<210> 90
<211> 2279
<212> DNA
<213> Sus scrofa
<400> 90

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<210> 91
<211> 753
<212> PRT
<213> Sus scrofa
<400> 91

Met Gly Leu Ser Glu Ala Pro Gly Gln Arg Asp Thr Gln Ala Leu Leu
1 5 10 15

Ser Thr Thr Gln Thr Met Glu Leu Arg Arg Arg Asp Tyr His Val Glu
20 25 30

Arg Pro Leu Leu Asn Gln Glu Gln Leu Glu Glu Leu Gly Asn Arg Gly
35 40 45

Ser Ala Thr Gly Thr Trp Gln Trp Arg Asn Trp Phe Arg Cys Ser Arg
50 55 60

Ala Arg Ala Tyr Ala Leu Leu Leu Gln Tyr Leu Pro Val Leu Thr Trp
65 70 75 80

```
Leu Pro Gln Tyr Pro Val Arg Glu Trp Leu Leu Gly Asp Leu Leu Ser
                85                  90                  95

Gly Leu Ser Val Ala Ile Met Gln Leu Pro Gln Gly Leu Ala Tyr Ala
            100                 105                 110

Leu Leu Ala Gly Leu Pro Pro Val Phe Gly Leu Tyr Ser Ser Phe Tyr
        115                 120                 125

Pro Val Phe Ile Tyr Phe Leu Phe Gly Thr Ser Arg His Ile Ser Val
    130                 135                 140

Gly Thr Phe Ala Val Met Ser Val Met Val Gly Ser Val Thr Glu Ser
145                 150                 155                 160

Leu Ala Pro Asp Glu Asp Phe Leu Gln Ala Ser Asn Ser Thr Val Asp
                165                 170                 175

Val Ala Ala Arg Asp Ala Arg Arg Val Gln Leu Ala Ser Ala Leu Ser
            180                 185                 190

Val Leu Val Gly Leu Phe Gln Val Gly Leu Gly Leu Val His Phe Gly
        195                 200                 205

Phe Val Val Thr Tyr Leu Ser Glu Pro Leu Val Arg Gly Tyr Thr Thr
    210                 215                 220

Ala Ala Ser Val Gln Val Phe Ile Ser Gln Leu Lys Tyr Val Phe Gly
225                 230                 235                 240

Leu His Leu Ser Ser Arg Ser Gly Pro Leu Ser Leu Ile Tyr Thr Ala
                245                 250                 255

Leu Glu Val Cys Trp Asn Leu Pro Lys Thr Val Val Asn Thr Leu Val
            260                 265                 270

Thr Ala Val Val Ala Gly Leu Val Leu Val Leu Val Lys Leu Leu Asn
        275                 280                 285

Asn Lys Leu Gln Lys His Leu Pro Val Pro Leu Pro Gly Glu Leu Leu
    290                 295                 300

Thr Leu Ile Gly Ala Thr Gly Ile Ser Tyr Gly Ile Gly Leu Asn Glu
305                 310                 315                 320

Val Asp Val Val Gly Arg Ile Pro Ala Gly Leu Val Pro Pro Val Ala
                325                 330                 335

Pro Ser Pro Gln Leu Phe Ala Arg Leu Val Gly Asn Ala Phe Ala Ile
            340                 345                 350

Ala Val Val Gly Phe Ala Ile Ala Ile Ser Leu Gly Lys Ile Phe Ala
        355                 360                 365

Leu Arg His Gly Tyr Arg Val Asp Ser Asn Gln Glu Leu Val Ala Leu
    370                 375                 380

Gly Leu Ser Asn Phe Ile Gly Gly Ile Phe Gln Cys Phe Pro Val Ser
385                 390                 395                 400

Cys Ser Met Ser Arg Ser Leu Val Gln Glu Ser Thr Gly Gly Asn Thr
                405                 410                 415

Gln Val Ala Gly Ala Ile Ser Ser Leu Phe Ile Leu Ile Ile Ile Leu
            420                 425                 430

Lys Leu Gly Glu Leu Phe Gln Asp Leu Pro Lys Ala Val Leu Ala Ala
        435                 440                 445
```

```
Val Ile Ile Val Asn Leu Lys Gly Met Leu Met Gln Phe Thr Asp Leu
    450                 455                 460

Cys Ser Leu Trp Lys Thr Asn Arg Val Asp Leu Leu Ile Trp Leu Val
465                 470                 475                 480

Thr Phe Val Ala Thr Ile Leu Leu Asn Leu Asp Leu Gly Leu Ala Val
                485                 490                 495

Ala Ile Ala Phe Ser Met Leu Leu Val Val Val Arg Ile Gln Leu Pro
            500                 505                 510

His Tyr Ser Val Leu Gly Gln Met Pro Asp Thr Asp Val Tyr Arg Asp
        515                 520                 525

Val Ala Glu Tyr Ser Glu Ala Arg Glu Val Pro Gly Val Lys Ile Phe
    530                 535                 540

Arg Ser Ser Thr Thr Met Phe Phe Ala Asn Ala Glu Leu Tyr Gly Asp
545                 550                 555                 560

Ala Leu Lys Gln Arg Cys Gly Val Asp Val Asp His Leu Ile Ser Gln
                565                 570                 575

Lys Lys Lys Leu Leu Arg Arg Gln Glu Leu Lys Leu Lys Arg Leu Gln
            580                 585                 590

Lys Gly Asn Lys Leu Val Lys Lys Asp Thr Ser Ile Ser Ile Asn Val
        595                 600                 605

Asn Thr Gly Ile Thr Asn Ile Glu Ser Asn Asp Val Glu Gly Ser Asn
    610                 615                 620

Val Lys Val Ser Ala Glu Asn Glu Leu Glu Asp Ile Ala Ala Gly Asp
625                 630                 635                 640

Gln Glu Asp Ala Lys Ala Pro Ala Met Ser Ser Leu Lys Ala Leu Gly
                645                 650                 655

Leu Pro Gln Pro Asp Phe His Ser Leu Ile Leu Asp Leu Gly Thr Leu
            660                 665                 670

Ser Phe Val Asp Thr Val Cys Leu Lys Ser Leu Lys Asn Ile Phe Arg
        675                 680                 685

Asp Phe Arg Glu Ile Glu Val Glu Val Tyr Met Ala Ala Cys His Ser
    690                 695                 700

Pro Val Val Ser Gln Leu Glu Ala Gly His Phe Phe Asp Ala Ser Ile
705                 710                 715                 720

Thr Lys Gln His Leu Phe Ala Ser Val His Asp Ala Val Ile Phe Ala
                725                 730                 735

Leu Gln His Pro Arg Ser Gly Pro Val Ser Pro Ala Leu Val Thr Lys
            740                 745                 750

Leu
```

<210> 92
<211> 17
<212> PRT
<213> Mus musculus
<400> 92

```
Gln Glu Gln Leu Glu Asp Leu Gly His Trp Gly Pro Ala Ala Lys Thr
1               5                   10                  15
```

His

<210> 93
<211> 19
<212> PRT
<213> Mus musculus
<400> 93

Lys Val His Gln Gly Glu Glu Leu Gln Asp Val Val Ser Ser Asn Gln
1 5 10 15

Glu Asp Ala

<210> 94
<211> 17
<212> PRT
<213> Mus musculus
<400> 94

Tyr Arg Leu Thr Gly Leu Asp Ala Gly His Ser Ala Thr Arg Lys Asp
1 5 10 15

Gln

<210> 95
<211> 17
<212> PRT
<213> Homo sapiens
<400> 95

Lys Glu Gln His Asn Val Ser Pro Arg Asp Ser Ala Glu Gly Asn Asp
1 5 10 15

Ser

<210> 96
<211> 739
<212> PRT
<213> Homo sapiens
<400> 96

Met Ser Ser Glu Ser Lys Glu Gln His Asn Val Ser Pro Arg Asp Ser
1 5 10 15

Ala Glu Gly Asn Asp Ser Tyr Pro Ser Gly Ile His Leu Glu Leu Gln
20 25 30

Arg Glu Ser Ser Thr Asp Phe Lys Gln Phe Glu Thr Asn Asp Gln Cys
35 40 45

Arg Pro Tyr His Arg Ile Leu Ile Glu Arg Gln Glu Lys Ser Asp Thr
50 55 60

Asn Phe Lys Glu Phe Val Ile Lys Lys Leu Gln Lys Asn Cys Gln Cys
65 70 75 80

Ser Pro Ala Lys Ala Lys Asn Met Ile Leu Gly Phe Leu Pro Val Leu
85 90 95

Gln Trp Leu Pro Lys Tyr Asp Leu Lys Lys Asn Ile Leu Gly Asp Val
100 105 110

```
Met Ser Gly Leu Ile Val Gly Ile Leu Leu Val Pro Gln Ser Ile Ala
        115                 120                 125

Tyr Ser Leu Leu Ala Gly Gln Glu Pro Val Tyr Gly Leu Tyr Thr Ser
    130                 135                 140

Phe Phe Ala Ser Ile Ile Tyr Phe Leu Leu Gly Thr Ser Arg His Ile
145                 150                 155                 160

Ser Val Gly Ile Phe Gly Val Leu Cys Leu Met Ile Gly Glu Thr Val
                165                 170                 175

Asp Arg Glu Leu Gln Lys Ala Gly Tyr Asp Asn Ala His Ser Ala Pro
            180                 185                 190

Ser Leu Gly Met Val Ser Asn Gly Ser Thr Leu Leu Asn His Thr Ser
        195                 200                 205

Asp Arg Ile Cys Asp Lys Ser Cys Tyr Ala Ile Met Val Gly Ser Thr
    210                 215                 220

Val Thr Phe Ile Ala Gly Val Tyr Gln Val Ala Met Gly Phe Phe Gln
225                 230                 235                 240

Val Gly Phe Val Ser Val Tyr Leu Ser Asp Ala Leu Leu Ser Gly Phe
                245                 250                 255

Val Thr Gly Ala Ser Phe Thr Ile Leu Thr Ser Gln Ala Lys Tyr Leu
            260                 265                 270

Leu Gly Leu Asn Leu Pro Arg Thr Asn Gly Val Gly Ser Leu Ile Thr
        275                 280                 285

Thr Trp Ile His Val Phe Arg Asn Ile His Lys Thr Asn Leu Cys Asp
    290                 295                 300

Leu Ile Thr Ser Leu Leu Cys Leu Leu Val Leu Leu Pro Thr Lys Glu
305                 310                 315                 320

Leu Asn Glu His Phe Lys Ser Lys Leu Lys Ala Pro Ile Pro Ile Glu
                325                 330                 335

Leu Val Val Val Val Ala Ala Thr Leu Ala Ser His Phe Gly Lys Leu
            340                 345                 350

His Glu Asn Tyr Asn Ser Ser Ile Ala Gly His Ile Pro Thr Gly Phe
        355                 360                 365

Met Pro Pro Lys Val Pro Glu Trp Asn Leu Ile Pro Ser Val Ala Val
    370                 375                 380

Asp Ala Ile Ala Ile Ser Ile Ile Gly Phe Ala Ile Thr Val Ser Leu
385                 390                 395                 400

Ser Glu Met Phe Ala Lys Lys His Gly Tyr Thr Val Lys Ala Asn Gln
                405                 410                 415

Glu Met Tyr Ala Ile Gly Phe Cys Asn Ile Ile Pro Ser Phe Phe His
            420                 425                 430

Cys Phe Thr Thr Ser Ala Ala Leu Ala Lys Thr Leu Val Lys Glu Ser
        435                 440                 445

Thr Gly Cys His Thr Gln Leu Ser Gly Val Val Thr Ala Leu Val Leu
    450                 455                 460

Leu Leu Val Leu Leu Val Ile Ala Pro Leu Phe Tyr Ser Leu Gln Lys
465                 470                 475                 480
```

```
Ser Val Leu Gly Val Ile Thr Ile Val Asn Leu Arg Gly Ala Leu Arg
                485                 490                 495

Lys Phe Arg Asp Leu Pro Lys Met Trp Ser Ile Ser Arg Met Asp Thr
            500                 505                 510

Val Ile Trp Phe Val Thr Met Leu Ser Ser Ala Leu Leu Ser Thr Glu
        515                 520                 525

Ile Gly Leu Leu Val Gly Val Cys Phe Ser Ile Phe Cys Val Ile Leu
    530                 535                 540

Arg Thr Gln Lys Pro Lys Ser Ser Leu Leu Gly Leu Val Glu Glu Ser
545                 550                 555                 560

Glu Val Phe Glu Ser Val Ser Ala Tyr Lys Asn Leu Gln Thr Lys Pro
                565                 570                 575

Gly Ile Lys Ile Phe Arg Phe Val Ala Pro Leu Tyr Tyr Ile Asn Lys
            580                 585                 590

Glu Cys Phe Lys Ser Ala Leu Tyr Lys Gln Thr Val Asn Pro Ile Leu
        595                 600                 605

Ile Lys Val Ala Trp Lys Lys Ala Ala Lys Arg Lys Ile Lys Glu Lys
    610                 615                 620

Val Val Thr Leu Gly Gly Ile Gln Asp Glu Met Ser Val Gln Leu Ser
625                 630                 635                 640

His Asp Pro Leu Glu Leu His Thr Ile Val Ile Asp Cys Ser Ala Ile
                645                 650                 655

Gln Phe Leu Asp Thr Ala Gly Ile His Thr Leu Lys Glu Val Arg Arg
            660                 665                 670

Asp Tyr Glu Ala Ile Gly Ile Gln Val Leu Leu Ala Gln Cys Asn Pro
        675                 680                 685

Thr Val Arg Asp Ser Leu Thr Asn Gly Glu Tyr Cys Lys Lys Glu Glu
    690                 695                 700

Glu Asn Leu Leu Phe Tyr Ser Val Tyr Glu Ala Met Ala Phe Ala Glu
705                 710                 715                 720

Val Ser Lys Asn Gln Lys Gly Val Cys Val Pro Asn Gly Leu Ser Leu
                725                 730                 735

Ser Ser Asp
```